

THE ZOOLOGIST

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THE PRESENT RANGE OF THE LION IN INDIA.

A WRITER in a recent number of the Calcutta 'Asian,' who has resided for twelve years in the province of Kathiawar, where, in the Gir Forest, the Lion is still occasionally to be found, gives the following account of its present haunts as compared with its former range in India, and hints at the causes which have contributed to its gradual extinction. He writes:—"We are told that a few Lions are still left in Guzerat and Kutch; but such is not the case.* I am rather doubtful if Lions were ever found in Kutch; at any rate, there are none left there now, and they have long since ceased to exist in the district of Guzerat, where at one time they are said to have been fairly plentiful. The last Lion seen in these districts was, I believe, the one which was shot near the Deesa Cantonment by the late Colonel Heyland, of the 1st Bombay Cavalry. At the present day Lions are only found in the Gir Forest in Kathiawar; formerly they abounded in all the wilder parts of the province, such as the Barda, Aleche, and Girnar Hills, as well as in the hilly tracts round Rajkot and Jasdan.

"It is said that in the year 1832-33 the officers of the 3rd Bombay Cavalry, stationed at Rajkot, used to shoot Lions off horseback, but those good times are gone for ever, and now the Gir Forest is the only place in the province where Lions are still

* It is curious to find so recent a writer as Mr. Sterndale, who ought to be well informed, perpetuating this myth in 1884 (Nat. Hist. Mamm. India and Ceylon, p. 161).—ED.

to be found, though in very considerably reduced numbers. At a later period the late Jam of Nawanagar used to shoot Lions in the Barda Hills, but it is long since they have been cleared out of this locality too. A few years ago a family party of Lions, consisting of a fine old Lion, a Lioness, and a cub, found their way into these hills during the monsoon when the crops were high from the Gir—a distance of some eighty miles, and doubtless if they had been left alone would have prospered; but this was hardly to be expected with the number of armed men roaming about the hills, and before very long the whole family was wiped out.

“Formerly there was not much fear of the Lions becoming extinct in the Gir Forest, as the latter covered a very much larger area of country than it does now, which, besides being very sparsely populated, was rarely entered by outsiders, who had a wholesome dread of the desperate outlaws who, driven from their homes by the oppression of their native rulers, invariably resorted there. The jungles, too, had a bad reputation for fever, and from want of roads were very difficult of access, so the Lions were left practically undisturbed, and increased and multiplied. With the quieting down of the country everything has much changed by the march of cultivation, the forest has been very much curtailed in area, villages and hamlets have sprung up in every direction, and in the hot weather especially the whole forest is overrun with swarms of cattle and their drivers.

“In the absence of any game or forest laws, it can readily be imagined what the effect of these improvements has been upon the Lions. Slowly but surely their numbers have been decreasing, and unless some more efficient steps than heretofore are taken for their preservation they will certainly become extinct before the lapse of many years. It is true that the Junagarh Durbar in Kathiawar has issued an order that no Lions are to be shot for a period of six years. This is a step in the right direction, but it is not enough. If the Durbar is really anxious to keep up the breed, it must in addition set apart a suitable tract of forest as a reserve under rules similar to those which obtain in British districts, into which not a soul should be allowed to enter under any pretext whatever. Such a reserve, besides benefiting the State in the matter of forest preservation, would afford a sanctuary for the Lions, who would once more find themselves left in peace. The promiscuous shooting which is now carried on amongst the State

forest and police sepoys, without let or hindrance, should be put a stop to with no light hand; and, lastly, the Durbar should, for some years, at any rate, desist from the practice of capturing the cubs. Without some such measure to back up its order prohibiting the killing of the Lions, the latter will not be of much avail.

“The damage is not done by the occasional shikar parties which kill a Lion, perhaps one in two or three years, but by the capturing of the cubs, in effecting which, as often as not, the mother is killed; by the indiscriminate slaughter of the Deer, the Lion's natural prey, which necessitates its taking to killing cattle—a habit which, sooner or later, leads to its death, and chiefly by the reckless destruction of the forest which is allowed to go on. When the forest disappears nothing will save the Lions; they cannot exist without it any more than fish can exist without water.

“It is strange how the theory that the Kathiawar Lion is devoid of a mane should have been started, but once having been so, there has been no want of writers to keep up the fallacy. During a residence of twelve years in the province I have seen many Lions, both in their wild state in the Gir as well as in captivity in the Junagarh State gardens; but I have yet to see a full-grown Lion without a mane. They all possess this appendage to a more or less degree, according to age, and some of the older beasts I have seen carried manes which, though scantier than those of menagerie Lions from Africa, would, I am sure, have lost but little by comparison with their African brothers in a wild state. As a rule, the manes of the captive Lions in the Junagarh gardens are longer and shaggier than those of the wild animals; but, owing to their habit of avoiding thorny jungle, there is not much to choose in this respect between the two. A Lion when taking his walks abroad invariably follows the cattle tracks and paths which intersect the jungle in all directions, and for resting during the day he prefers to any other covert the shade of a large banyan tree, where the cool breeze will reach him.

“The statement made in the ‘Badminton Library,’* that a black mane is unknown in India, is not correct. In the account of the Kathiawar Lion given in vol. viii. of the ‘Bombay Gazeteer,’ which was contributed by a well-known Kathiawar sportsman, who

* ‘Big Game Shooting’ (India, by Lieut.-Col. R. Heber Percy), vol. ii. p. 194.

knew more about the Gir Lions and their habits than I suppose any one of his time, we are told that with age the whole body of the Lion becomes darker and his mane grows black. I have not myself seen a Gir Lion with an entirely black mane, but I have assisted at the skinning of an old Lion which was shot by a friend, of which the mane was partially black, and with increasing age would doubtless have become entirely so.

"In point of character I do not fancy there is much to choose between the Kathiawar and the African Lion. Although Gir Lions are often found alone, they prefer to move about in family parties or pairs. Of several Lions I have shot, only one was alone—a grand beast, which had been marked down by my trackers on the summit of a low hill, where it was found sleeping in the breeze under the shade of a small tree."

After describing several successful Lion hunts in Kathiawar, in which he was the principal actor, the writer proceeds:—

"In point of size, I imagine, the Gir Lion is not much, if at all, inferior to its African brother. Selous gives 9 ft. 11 in. as the extreme length of his largest Lion in a straight line between uprights, but this must have been an exceptionally large beast. In 1871 Captain Trotter, of the Trigonometrical Survey, is said to have shot a full-grown Lion, which, as it lay on the ground, measured from the nose to the tip of the tail 8 ft. 10 in., of which 5 ft. 11 in. was the length of the body; the height at the shoulder was 3 ft. 4 in., the girth of neck 2 ft. 6 in., the girth of chest 4 ft. 1 in., the girth of forearm 1 ft. 9 in., and the length of hair in the mane 5 in. One shot by Colonel Jackson measured 9 ft., two by the late Colonel Watson 9 ft. and 9 ft. 1 in. respectively, and one by the late Captain Hebbert 9 ft. 6 in. I am unable to say whether these measurements were taken between uprights or along the curves of the head and body. The following are the measurements of my best Lion, the one I have mentioned before as having been shot on the top of a hill:—

Total length, following the curves of the body 9 ft. 5 in.

Length of tail only 2 ft. 11 in.

Two of my others taped respectively 9 ft. and 9 ft. 1 in. measured in the same way.

"The skull measurements of the 9-foot Lion were as follows:—Length from insertion of incisors to end of occipital process, $13\frac{3}{4}$ in.; depth, $6\frac{1}{4}$ in.; width across zygomatic arches, $9\frac{1}{4}$ in. A

very fine old Lion, which was shot only last year by the late Lieut. P. Hancock, measured 9 ft. 5 in. It was a grand old beast with a fine mane, which was just beginning to turn black.

"From its colour, which varies from ashy to tawny, the Lion is sometimes called the *Unthia Bagh*, or camel tiger, but the name by which it is generally known in the Gir is *Savai*, which is said to be of Arabic origin, meaning 'he who causes the flocks to bleat.' The Lioness is called *Shian*, and a pair of Lions hunting together are called *Belar*.

"The cubs, so far as I have been able to ascertain, are generally born in the monsoon months,* and the Lioness generally deposits her litter [from two to six] in one of the holes or earths formed by the action of water, which are found scattered about the Gir, and known locally by the name of *bohiras*. Some of these *bohiras* are very large, and said to be of great length, and to hold water at the bottom; consequently they are cool, and for this reason are often resorted to by Lions during the hot weather. I know of one instance in which three Lions, and of another in which two Lions, were marked down in one of these *bohiras*."

Dr. W. T. Blanford, in his 'Fauna of British India' (Mammalia, 1891), which may be regarded not only as the latest but also as the most authoritative work dealing with the subject, remarks (p. 57), under the head *Felis leo*:—"In India the Lion is verging on extinction. There are probably a very few still living in the wild tract known as the Gir in Kattywar (*sic*), and a few more in the wildest parts of Rájputána, especially southern Jodhpur, in Oodeypur, and around Mount Abu. About twenty years ago (1868) Lions were common near Mount Abu, several were shot near Gwalior,† Goona, and Kotah, and a few still existed near Lalitpur, between Saugor and Jhansi. One is said to have been killed near Goona in 1873. In 1864 one was killed near Sheorajpur, twenty-five miles west of Allahabad; and when the railway was being made from Allahabad to Jubbulpur, in 1866, a fine Lion with a good mane was shot by two of the engineers near the eightieth milestone from Allahabad. About 1830, Lions were common near Ahmedabad. Several years previously, in the early part of the century, Lions

* Sterndale states that the period of gestation is fifteen or sixteen weeks. *Op. cit.* p. 161.—ED.

† Jerdon states that two Lions were killed most unexpectedly near Gwalior in 1874 ('Mammals of India,' p. 92).

were to be found in Hurriana* to the northward, and in Khandesh to the south, in many places in Rájputána (one was shot in 1810 within forty miles of the Kot Deji in Sind), and eastward as far as Rewah and Palamow. It is probable that this animal was formerly generally distributed in North-Western and Central India." †

Dr. Blanford adds that he has never heard of a Lion in Kutch, and suspects that Jerdon ('Mammals of India,' p. 92) was mistaken in supposing it to be found there.

Eastward and north of India the Lion is not found, and almost the only part of Western Asia in which it is common is in Mesopotamia and part of South-Eastern Persia.

ON THE NESTING OF THE MARSH WARBLER, *ACROCEPHALUS PALUSTRIS*.

BY W. WARDE FOWLER, M.A.

ONCE more I have had exceptional opportunities of studying this bird in the breeding season; this being the fifth year of its annual return to its favourite osier-bed. In May the osiers were being cut, and I was on the point of abandoning my hopes of seeing our visitor again this year; but the owner of the acre or so of withies most kindly consented to postpone further operations until the autumn, and on June 5th I had the satisfaction of listening to the expected song. This is the same day of the month on which I first heard the bird here in 1892, and within my experience the birds have always been as regular in all their operations as if they went by an almanack. I have described the song before, and will here only add that in my opinion it is quite unrivalled for variety and pure silvery tone. The mimicry contained in it does not detract from its peculiar charm, and might well pass unobserved by a careless listener. The birds imitated were almost exclusively those inhabiting the osier-bed

* Andrew Murray states that it was extirpated at Hurriana in 1824 (Geogr. Distrib. Mammalia, p. 93).—Ed.

† Cf. Journ. As. Soc. Bengal, xxxvi. part 2, p. 189; Proc. As. Soc. Bengal, 1868, p. 198; and Journ. Geogr. Soc. 1870, p. 204. The last we have heard of were two reported to have been killed by some officers of the Central India Horse when stationed at Goona in 1881.—Ed.

or its surroundings at the time—*e. g.* Whitethroat, Reed Bunting, Chaffinch, Tree Pipit, &c.

On the 13th the singing ceased, nor did I hear it again except in occasional snatches. This has been my experience every year about the middle of June, and I am driven to conclude that in this country the song practically ceases when the nest-building begins. In Switzerland I have several times heard this bird in full song close to nest and eggs.

There was, however, just sufficient indication of the bird's presence to lead me to make gradual search in one portion of the osiers; and here, on the 27th, I found the nest with five eggs. The spot was but a few yards from that chosen last year; and again I had to admire the skill, aided no doubt by good fortune, with which the birds contrived to escape all mishaps. Ploughs and ploughboys have been at work, weeds have been burnt, and grass cut within a very few feet of the nest, yet a few simple precautions on my part have been enough to secure it from discovery. I suspect, however, that an earlier nest had been destroyed before its completion, for this one was the most fragile I have ever seen, and was evidently built in a great hurry. It was composed entirely of dry grass, without the usual lining of horsehair, and also without any moss on the outside. It was placed in the fork of an osier-sapling at about a foot and a half from the ground, and had three or four shoots of meadow-sweet woven into the rim. As usual, it was quite close to the edge of the osier-bed, and well away from water.

I was now able to visit the nest daily, and as I frequently had the birds within a couple of yards of my head I became very familiar with their appearance and alarm-notes. I cannot agree with the writers who describe this species as having the upper parts *olive-brown* at this time of year: I can discern nothing approaching to a greenish hue in the living bird, unless it be perhaps towards the tail. The colour is to my eye a pale earth-brown, uniform all over the back. The head is slightly darker; the legs are pale or dull flesh-colour; the stripe over the eye is barely visible in one of the pair—I am not sure which; in the other it is a faint buff. The alarm-note is much like that of the Sedge Warbler, but higher in pitch and less grating: I learnt to distinguish the two without difficulty. When much excited the birds—or possibly the male only—would utter a musical

and most pleasing chirrup as well as the usual alarm-note, an utterance which frequently occurs in the song; and in fact once or twice the bird almost broke out into song, as the Sedge Warbler does when angry.

After a short absence, I found four young birds in the nest on July 12th. The first contour-feathers were almost black: on the tongue were two barb-shaped spots, or rather processes, with the narrow end towards the bill fixed, while the broad one towards the throat was loose, and was raised when the nestlings opened their bills wide. Two days later brown feathers on the back began to appear, the brown being decidedly darker and more rufous than that of the parents. The iris was very dark brown; the legs and feet light flesh-colour. The throat was buffish white, and the breast dull buff.

On the 18th the family left the nest; but I had no difficulty in finding them again, for by this time they were almost the only occupants of the osier-bed. The Sedge Warblers had been gone some days before and also the numerous Whitethroats; only a Reed Bunting or two broke the general silence. It was easy to distinguish the young birds by their darker brown backs, their yellow bills, and the duller white of throat and breast. I found them using as a call-note the same sibilant cry which their parents used as an alarm; but it was shorter and fainter, and almost more like a hiss than a croak. One young bird had died in the nest and been ejected, and I had taken one egg; so we have three young birds at present in the osiers. They were not to be found on the 22nd; they were the last to leave the osier-bed, which now (July 28th) seems entirely deserted.

THE HIBERNATION OF BUTTERFLIES.

From the French of M. G. de Rocquigny-Adanson.

BY THE EDITOR.

THE hibernation of butterflies belonging to the genus *Vanessa* is not of that exceptional character which one is accustomed to assign to it. On the contrary, it must be regarded as an annual periodical phenomenon, perfectly normal. Whether the winter be mild or excessively cold, it matters not. This we are to some extent able to prove from actual facts collected in the centre of

France during the past ten years. We have, as a matter of fact, for the period 1887-1896, the dates of appearance of the hibernating species noted for each year with the greatest care, as shown in the following table.

As will be seen, neither the long and snowy winter of 1887-88, nor the great winter of 1890-91, nor the hard and prolonged winter of 1894-95, seems to have exercised the least influence, except, of course, as regards the earliest and latest date of appearance.

HIBERNATING SPECIES.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.
<i>Vanessa</i>										
<i>c-album</i>	Mar. 7	Apr. 1	Mar. 23	Mar. 13	Feb. 22	Mar. 17	..	Mar. 21	Mar. 19	Mar. 14
<i>polychloros</i>	.. 5	Mar. 23	Apr. 5	Feb. 20	.. 28	.. 20	Mar. 22	..	.. 23	.. 14
<i>urticæ</i>	Feb. 26	.. 8	Mar. 9	.. 18	.. 21	.. 17	.. 21	Mar. 21	.. 17	Feb. 9
<i>Io</i>	Apr. 18	Apr. 1	.. 10	Mar. 28	.. 27	Feb. 20	.. 12	.. 28	Apr. 5	Mar. 15
<i>Antiopa</i>	.. 18	Mar. 28	Apr. 10	.. 27	Apr. 10	Mar. 17	..	.. 27	.. 5	.. 23
<i>Atalanta</i>	Mar. 7	Apr. 18	.. 19	.. 27	.. 10	.. 21	..	.. 24	..	Apr. 27
<i>cardui</i>	..	..	..	..	..	..	..	..	..	..
<i>Rhodocera</i>										
<i>rhamni</i>	Feb. 4	Mar. 8	Mar. 9	Jan. 5	Feb. 20	Jan. 30	Mar. 21	Mar. 1	Mar. 18	Feb. 11

It may perhaps be a matter of surprise that we did not succeed in taking a single hibernating specimen of *V. cardui* during the whole ten years. Such is the case nevertheless, and we cannot alter it. Other parts of France doubtless are more privileged than ours from this point of view. The appearances of this *Vanessa* are, moreover, always more or less irregular.

It should be remembered that the earliest normal broods of *Vanessa* usually appear in June and July, rarely towards the end of May, and only with *V. urticæ*, at least so far as our experience goes.

There are other hibernating Lepidoptera which appear regularly after or even during winter, amongst which we may name, for example, *Rhodocera rhamni*, *R. Cleopatra*, *Macroglossa stellatarum*, *Gonoptera libatrix*, *Larentia dubitaria*, and *Tinea misella*.

Rhodocera rhamni (the "citron" of Geoffroy) is the most precocious of all. We have seen it on the wing on the 5th January, 1890, and the 30th January, 1892.*

* Translated from the 'Revue Scientifique' for August, 1896.

ON THE BREEDING OF THE WALL CREEPER,
TICHODROMA MURARIA.

By W. H. ST. QUINTIN.

THE interest which attaches to the habits of this charming little bird is my excuse for asking you to insert the following in your pages. On the 5th inst. I was descending the gorge of the Trift, so well known to visitors to Zermatt as giving access to some of the most interesting of the minor peaks to be reached from that most attractive climbing centre. As I reached the lower end, and was coming out into the main valley, the movements of an object on the face of the opposite wall of rock attracted my attention. A glance through a glass made certain that it was, what I had suspected, a Wall-creeper. Sitting down, I watched and saw that the bird was gathering food, and that the bunch in its beak of what appeared to be light-coloured moths and spiders' nests was rapidly accumulating as the bird pursued its irregular course up and along the precipitous rocks, shifting its position with jerky leaps more frequently in a horizontal direction, flirting its wings and tail, and showing the lovely rose-coloured shoulders in a way which, with its general plumage of quaker-grey, irresistibly suggested comparison with an enormous crimson underwing moth. Presently, dropping off the cliff, the bird, which by this time I had identified as a female, passed me in its fluttering flight, and disappeared round a projecting rock nearly on my level. While I watched to see if it would return, I suddenly saw before me the male hunting over the same rock, on which he seemed to find an abundance of food, for in a very few minutes he too had his "load" ready for delivery to what I now knew was at hand, an expectant brood. His search concluded at a considerably higher level than that of his mate, and letting go his hold, he allowed himself to sink through the air until, when opposite to me, he arrested his drop, and pursued an exactly similar flight to that of the female.

It did not take me long to turn the angle of the rock in question, and I soon discovered a likely-looking crevice, and I sat down against a grey stone with my glass in readiness at a distance of some thirty-five or forty yards. I had seen neither bird commence its hunt for food, nor leave the spot in which

I expected the nest to be. But as I watched I had not long to wait before one of the birds, the male again, came swinging round the corner with a beakful of food and lit upon the slab of stone a few yards from the crevice. I was discovered at once, and the bird seemed irresolute whether the risk of approaching the nest was not too great; but, as I remained quiet, he soon commenced with sidelong hops to approach the crevice, and at last disappeared within it.

The crevice seemed six or eight inches wide at the outside, and was some twelve or fifteen feet long, horizontal, and appeared to have been caused in the fall of a gigantic block as large as a four-roomed cottage, which had left the mountain-side, and had found a resting-place on the upper edges of the boulders in the torrent-bed. A further slip had apparently occurred, and the upper portion had moved forward, causing it to project over the lower half, and of course made a projecting roof to the crack in which the nest was placed. The rock overhung the torrent, swollen with the rapidly-thawing snow, and nothing could be done in the way of further examination of the nest-site without a rope and crowbar, neither of which was at hand.

I watched several visits of the male bird, but the female did not appear for some time. At last, after one of the visits of the male, after leaving the crack, and when on the point of taking wing, he scrambled up the slab again, fluttering his wings and showing the beautiful colours to the greatest advantage, in much excitement. From the nest out slipped the female, bearing away in her beak what was evidently the dropping of one of the brood, and I watched her flight until she began, in her turn, to search for food, the male having taken a longer flight round an angle of the mountain side.

At this point I was obliged to leave them, as there was a dance going on in a half-finished chalet above, and I noticed that I was arousing the curiosity of the young people passing up and down by my movements, and I was of course afraid of betraying the secret which I had accidentally discovered. But a friend told me that a few days afterwards, in passing the place, which I had described to him, he saw the parent birds still busy, so no doubt the brood was soon afterwards safely launched.

I was surprised to find that a site had been selected by these birds, which one is accustomed to see in such desolate

surroundings, within forty yards of a turn in a track up the gorge, certainly never a much-frequented one, and probably this late season not in use at all at the time when the birds made their choice, but still quite within the "bounds of civilisation," and within sight, and almost within hearing, of the stir and bustle of Zermatt down below.

THE NATURAL HISTORY MUSEUM AT CARLISLE.

BY REV. H. A. MACPHERSON, M.A.

My friend Mr. J. H. Gurney has suggested that a brief notice of the Carlisle Museum might fitly follow his article on the Norwich Museum (p. 81). For my part, I am not fond of comparing great things with small; the Norwich Museum is a *fait accompli*, while the Carlisle Museum is only gasping for its first breath. A few years ago Mr. Charles Ferguson, of Carlisle, the eminent architect, brother of Chancellor Ferguson, F.S.A., a well-known authority on the archæology of North-west England, persuaded the public to purchase a large house in Carlisle (called "Tullie House," after a former owner of that name), with the view of converting the same into a Museum of Antiquities and a School of Art. The late Bishop Goodwin warmly espoused the cause, as did many local gentlemen. The building was secured and presented to the Corporation of Carlisle. It then occurred to my late friend, Mr. J. W. Harris, of Broughton, Cockermouth, to offer the Corporation his collection of mounted British birds, to be exhibited in Tullie House on certain conditions. The Corporation did me the honour of requesting my advice on the subject. In association with the late Messrs. T. Duckworth, John Sinclair, and other genuine working men, I had been struggling for years to persuade the local public of the need of a local Natural History Museum worthy of the name. It was therefore a great pleasure to be able to advise the Corporation, that if they were willing to regard the Harris collection as only a nucleus, and to mount the rarer skins in my own collection, which I was willing to place unreservedly at the service of the public, I felt convinced that within a few years we could bring together a really useful collection of British birds, chiefly local,

and illustrating as far as possible the various changes of plumage which the different species pass through. I persuaded my valued friend Mr. Harris that the older birds in his series should be replaced by fresh specimens. I deeply regret that his death deprived us of the advantage of the advice of a senior naturalist, whose practical knowledge would have been helpful in many ways. To cut the story as short as possible, the Harris Collection came to Carlisle, and, after the usual inevitable delay, was lodged in Tullie House. The Chairman of the Corporation Committee was Chancellor Ferguson. He was kind enough to adopt such suggestions as Mr. D. L. Thorpe and I could make. A deputation of the Corporation Committee visited Newcastle, and a careful examination of the Museum in the hands of Mr. Howse satisfied them that they could accept my suggestion to mount our birds in similar cases to those which Mr. Hancock approved. A birdstuffer—Mr. Hope, of Penrith—was engaged to commence with such of the Harris birds and my skins and fresh specimens as were most suitable. His time, however, could only be given by instalments.

The Corporation have treated the natural history department of Tullie House in a generous spirit, but it is only one item in their scheme—an item for which they have no personal taste or appreciation. We have now a fair number of groups of British birds ranged on shelves along the walls of a large gallery on the ground floor; but the time which the birdstuffer can devote to the work is very limited. We have not as yet given much time to the Passeres; but the cases of the Black Redstarts, Bearded Tits, and a few others are already appreciated by the public. A fine series of the four British Skuas includes an adult Buffon's Skua in full summer dress from the neighbourhood, as well as many specimens in different stages. The *Anatidæ* include a good series of certain species, notably *Harelda glacialis*, *Fuligula marila*, *Dafila acuta*, and others. The Dotterels were mostly skinned by myself. An exception to this may be made in regard to the nestling in down presented by Mr. Evelyn Rawson. One day in 1893, when Mr. Thorpe was studying wildfowl in Western Canada, and I was away on sick furlough, Mr. Rawson arrived with three little downy Dotterel, all in the flesh, and intended for the Carlisle Museum. In our absence we lost the opportunity. Nevertheless Mr. Rawson gave us the only nestling which

remained in his hands when I returned to duty. Some other cases of waders may be said to rise above mediocrity. One of the downy Grey Plovers, which Messrs. Seeböhm and Harvie Brown brought back from Siberia, has been lately added to the Museum. Two beautiful adults in full summer livery, a phase very difficult to obtain on the Solway Firth, are included in the same case.

The Phalaropes also come out pretty well. The best Grey Phalarope is an old female, shot on the Solway in December, and wearing complete winter dress with the exception of a single red feather still retained among the upper tail-coverts.

The prettiest case of *Laridæ* is that of *Xema sabinii*, which is only, however, represented by two immature birds. One of these was shot on the Dorset coast, at the beginning of December, 1893 (not, as I recorded, in November); its fellow is a bird which was shot on the Solway Firth the same year. The next group is that of *Larus minutus*. The two adults are of foreign origin; but both the immature birds and the specimen in change were shot on the Solway.

It would be tedious to give such cursory jottings as these at any greater length; but it may be pardonable to point out that the collection includes a few local rarities. Mr. Edward Tandy was good enough to give the Museum the only Cumbrian specimen of the Pectoral Sandpiper. Mr. J. H. Gurney most generously allowed the Crofton-killed specimen of the Surf Scoter to return to the county in which it was shot. (I gave him the only good bird I had myself in exchange, an adult Ivory Gull, which had belonged to Sir W. Jardine.) The unique British specimen of the Isabelline Wheatear was given to the National Collection before the present Carlisle Museum was opened, but we have the promise of the loan of a local Alpine Swift; and Mr. Heywood Thompson has lent his immature male specimen of the Surf Scoter, which he shot on the Ribble. Mr. John Young was kind enough to bring us the downy young of the Little Ringed Plover from Hungary, with a pair of old birds. Mr. John Benson was good enough to bring two nestlings of *Turdus pilaris* from Norway at my request. Professor Collett has most kindly presented nestling skins of the Shore Lark, Siskin, and two or three other species.

No public funds are available for acquiring specimens. We

Tunicata	900
Mollusca	50,000
Brachiopoda	150
Bryozoa	1800
Crustacea	20,000
Arachnida	10,000
Myriopoda and Protracheata	3,000
Insecta	230,000
Echinodermata	3,000
Vermes	6,150
Cœlenterata	2,000
Spongiæ	1,500
Protozoa	6,100
Total	<hr/> 366,000

MAMMALIA.

The Rabbit Plague in Australia.—An American writer, Mr. Bosse, of New Orleans, has addressed a letter to the United States Minister of Mines and Agriculture, suggesting the advisability of introducing into Australia the American Eagle Owl (*Bubo virginianus*), in order to keep down the Rabbits. Australia already possesses several diurnal birds of prey which habitually kill and feed on Rabbits, as, for instance, the Wedge-tailed Eagle (*Aquila audax*), the Australian Goshawks (*Astur approximans* and *A. cruentus*), the Black-breasted Buzzard (*Buteo melanosternum*), and the Australian Kite (*Milvus affinis*); and if these birds were only left unmolested they would do good work in the direction desired. The proposed introduction of another bird of prey is not only unnecessary, but also highly undesirable for other reasons. The American Eagle Owl would, no doubt, kill Rabbits, but it would certainly not confine its attention to these animals, and the account given of it by American naturalists shows it to be a very unwelcome neighbour to farmers and poultry keepers. Dr. A. K. Fisher, at page 175 of his useful work, 'The Hawks and Owls of the United States in their relation to Agriculture' (Bull. U.S. Department of Agriculture, No. 3, 1893), thus describes its habits:—"Of all the birds of prey, with the exception possibly of the Goshawk and Cooper's Hawk, the Great Horned Owl is the most destructive to poultry. All kinds of poultry seem to be taken, though when Guinea Fowls and Turkeys are obtainable, it shows a preference for these. In sections of the country where it is common, the inhabitants often complain bitterly of its ravages. An examination of the table at the end of this article will show that a large proportion of the specimens contained the remains of poultry." The following, from the pen of Dr. P. R. Hoy, shows how destructive a single Owl may be:—"The specimen in the Museum of the Philadelphia Academy was known to carry off from one farm in the

space of a month not less than twenty-seven individuals of various kinds of poultry before it was shot" (Proc. Philad. Acad. Nat. Soc. vol. vi. 1853, p. 307). Dr. Hart Merriam also, in his 'Birds of Connecticut,' 1877 (p. 97), states that he has known one of these birds to kill and decapitate three Turkeys and several hens in a single night, leaving the bodies uninjured and fit for the table. In portions of the country where game birds are common the depredations among them are nearly, if not fully, as great as in the poultry yard. Ruffed Grouse particularly seem to suffer, probably on account of their conspicuous size. Mr. E. E. Seton found two Ruffed Grouse and a Hare in the nest of a species in Manitoba ('Auk,' vol. ii. 1885, p. 21). A number of stomachs recorded in the table drawn up by Dr. Fisher contained the remains of this noble game bird. Domesticated Pigeons seem to be particularly agreeable to the Owl's taste, and the neighbouring dovecotes suffer correspondingly. With these authoritative statements in view, therefore, it seems to us that it would be extremely unwise to adopt Mr. Bosse's suggestion, and we trust that the Australian authorities will be warned in time against taking any such step as that proposed.

Date of Birth of Young Otters.—On May 27th last a female Otter, *Lutra vulgaris*, weighing 17 lbs., was killed in the river Irt near Holmrook, by the West Cumberland Otter-hounds. The huntsman, Mr. Isaac Fletcher, when cleaning it, found three perfectly formed young ones *in utero*. He preserved one in spirits and destroyed the other two. I believe I am justified in stating that the young in this instance would have been produced about the middle of July.—JOHN R. DENWOOD (Kirkgate, Cockermouth).

Fecundity of the Stoat.—A few summers ago I had reason to believe that a pair of Stoats were rearing their offspring beneath the *débris* of an old haystack near to Ashlands, in Leicestershire. A trap, baited with a House Sparrow, was set overnight some twenty yards away, with the result that the following morning the female Stoat was found dead in it, but the bait gone. Thereupon I worked down to the presumed nest, from which the male bolted and was shot, and in due course I came upon *thirteen* young ones and the dead sparrow, quite intact, lying in their midst. The male had obviously carried the bait from the trap after the female had been caught and killed by it. The young, I may add, were only two or three days old. With regard to the manner in which Stoats convey eggs, and concerning which questions are frequently asked, it may be of interest to state that the eggs are *not* carried in the mouth, but are rolled along the ground, propelled and directed by the chin and fore feet alternately. At least such is my conviction after ocular experience of the performance at fairly short range.—H. S. DAVENPORT (Skeffington, Leicester).

Squirrel killing Small Birds.—As some doubts have been expressed about the Squirrel being carnivorous, perhaps the following fact may interest some of your readers. A few days ago (in July) my daughter's attention was attracted to the top of an ivy-covered garden wall by hearing a sudden commotion there. Upon hastening to the spot she saw a pair of Robins scolding at a large handsome Squirrel which had robbed their nest, and was carrying off a full-fledged young Robin, which was uttering piteous cries. The Squirrel then ran along the garden-wall, and leaped from it to a pine-tree, when it disappeared with its prey.—(Mrs.) FRANCES J. BATTERSBY (Cromlyn, Westmeath, Ireland).

Squirrel killing Small Birds.—On July 18th my father had his attention attracted to an oak tree by the plaintive cries and flutterings of two birds which proved to be Flycatchers. The cause of their commotion was soon seen, for sitting on the poor birds' nest was a Squirrel coolly devouring a fledgling which he held in his paws as he would a nut. The nest was situated on the limb of the oak some fifteen feet from the trunk, and about the same distance from the ground. On the next day I procured the nest, and found further conclusive evidence of the carnivorous propensity of that Squirrel. Lying in the nest were two of the young birds' skulls, four legs, and one wing. They were what might be termed picked clean.—CHARLES CAMPBELL (Dalmeny Park, by Edinburgh).

Squirrel climbing a House.—On June 13th I disturbed a Squirrel in front of the school buildings at Giggleswick, Settle. On seeing me it ran up the side of the Hostel to the height of forty feet, and remained there for twenty minutes; then it made a jump and came down into the drive, and ran off into the wood behind the school. I have never seen a Squirrel run up a side of a house before.—W. RAMSBOTHAM (Meale Brace Hall, Shrewsbury).

BIRDS.

Sand Grouse breeding in Captivity.—The nesting habits of this beautiful group of birds are so little known that the following account of the successful breeding in confinement of *Pterocles alchata* may be of interest to readers of 'The Zoologist.' Two old pairs of this species of Sand Grouse nested in my aviaries this summer. The eggs of one pair were broken unfortunately by being walked upon by a pair of Nicobar Pigeons. The other pair successfully hatched off their young ones. The nests are deeply scratched in the gravel path that surrounds the turf lawn in the outer compartment of the aviary. The number of eggs laid were in one instance four and in the other two. I removed one egg from the pair which had four eggs, knowing that three eggs are the proper complement, and also because I thought that one egg appeared to have a thin shell. Incubation was commenced by the cock, who went on the nest the evening

of the day that the third egg was laid, his place being taken next morning by the hen, who went on and laid her fourth egg, and this arrangement was kept up all during incubation, which lasted twenty-three days, viz. the cock sitting all night and the hen all day. To my mind this is an extremely interesting fact: the brightly plumaged cock sitting during the dark hours, and the hen, with her protective colouring, sitting during the day. The breeding males did not begin to change their breeding plumage for the protective breeding plumage until after the young were hatched. As soon as the young were out of the nest (when twelve hours old) a very curious habit developed itself in the male. He would rub his breast violently up and down on the ground, a motion quite distinct from dusting, and when all awry he would get into his drinking water and saturate the feathers of the under parts. When soaked he would go through the motions of flying away, nodding his head, &c. Then, remembering his family were close by, would run up to the hen, make a demonstration, when the young would run out, get under him, and suck the water from his breast. This is no doubt the way that water is conveyed to the young when hatched far out on waterless plains. The young, which are most beautiful little creatures, and very difficult to see even in an aviary, are very independent, eating hard seed and weeds from the first, and roosting independently of their parents at ten days old.—E. G. B. MEADE-WALDO (Rope Hill, Lymington, Hants).

The Coloration of Pallas's Shrike.—Some years ago (*vide* Zool. 1890, p. 27; 1891, p. 187; 1892, p. 112) I wrote three notes in 'The Zoologist' upon Grey Shrikes, and especially upon the colour of the rump of *Lanius major*, in which I disputed the statement that the adult male of this form had a white rump. I have recently examined about a dozen examples of *L. major* in Norwegian museums, and found that in every case the rump was grey. In the case of several of these examples there was an entire absence of the semi-crescentic dark marks on the under parts, which have been said to characterize this species at all ages. Doubtless these were fully adult examples, and they prove that the adult *L. major* resembles the adult of *L. excubitor* in this respect. I examined the bird killed in Norway, and recorded as "hardly distinguishable" from a female of *L. borealis* (*cf.* 1892, p. 113), and I believe it is nothing more than an unusually brown example of *L. major* in immature dress.—O. V. APLIN (Bloxham, Oxon).

Birds and Garden Peas.—The rows of peas in our kitchen garden here have been so punished that my gardener quite gave up one long row, having all the peas in it taken, and in several others quite half. I put it down to Hawfinches, which have for several years nested near, and taken a fair share; but as the destruction was so great, I watched, and was much surprised to see two old Great Tits fly down and punch a hole through the pod, and, after flying up into a fruit tree, take the skin off the pea, then

give the inside to four or five of their young ones, which received this tender morsel with soft cries and shivering wings, suggestive of a certain amount of enjoyment. On carefully examining the pods I found that the Hawfinch and Great Tit took out the peas in different ways. The Hawfinches cut the pods as with a pair of scissors; the Tits punched holes on one side of the pod. I only hope the young birds will not take to this food; if so, we shall have to sow two or three extra rows every year. This is the first time I have noticed the Great Tit take green peas.—J. WHITAKER (Rainworth, Mansfield).

Spotted Flycatcher Nesting directly on Arrival.—This bird, which is nearly always the last spring visitor to arrive, was seen here for the first time on May 13th. They always arrive during the daytime, and not during the night or very early morning, as the greater number of spring birds do. The first pair were seen about 3 p.m. on the 13th, and on the 14th, at lunch-time, I noticed they were busy building in a box put up for them near the dining-room window here; the nest was finished and one egg in by the 18th, and now (July 10th) the birds, having reared their first brood, are again sitting. Two other pairs in the garden are building their second nests. We always have two artificial nesting boxes here for this species, put pretty near each other, for they never or seldom nest a second time in the same place during one season. This bird commences to nest sooner after arrival than any other spring migrant. All the earlier birds, such as Chiffchaffs and Willow Wrens, are about three weeks before starting; Swallows about a fortnight. We have a greater number of this interesting species than usual; seven pairs have nested round the house.—J. WHITAKER (Rainworth, Notts).

On *Anthus cervinus* and *A. rupestris*.—I have been much interested in Mr. Coburn's remarks upon *Anthus cervinus* in winter dress (pp. 101, 256, 257), but I confess that I cannot follow him when, referring to his specimen shot in November, he writes, "It is much paler in colour than *pratensis*" (p. 101). And as Mr. Coburn, in his second note (p. 257), tells us that this is the only specimen of the bird he has ever seen, I hope he will pardon me if I suggest the possibility of his having got hold of a rather peculiar specimen. I have only four specimens of *A. cervinus* in my possession, viz. a male from Egypt, killed in December; two spring females from Lapland; and a male which I shot in Tunis in the early part of April, but cannot be said to have assumed the full summer dress, although it is changing. All these birds are distinctly darker in colour on the upper parts than *A. pratensis* (of which I have a good series) in winter plumage, which in that stage always shows an oil-green tinge, lost in spring and summer. I have only seen *A. cervinus* alive in a wild state in April in North Africa, and in June in Arctic Norway; but it was then so distinctly

a darker coloured bird than *A. pratensis* that (in view also of my Egyptian skin) I cannot imagine that in its ordinary winter dress it could be rightly described as lighter in general colour than *A. pratensis* at the same season. I have recently examined examples of *A. cervinus* in the museums at Tromsø, Trondhjem, and Christiania, and although most of these were adults in summer dress, I find in my note-book the following remarks on eleven examples at Christiania (*viz.* seven adult males, and females, summer; three immature; and one adult female, autumn):—"All generally darker than *pratensis*, though the light edges are more pronounced, contrasting with the conspicuously dark centres; markings of under parts very bold, black, and big." The autumn female would not be different from the birds in winter dress, and probably the three immature examples would not differ very much. My impression of *A. cervinus*, founded upon the small amount of personal observation here detailed, is that it is certainly in all stages of plumage a darker bird than *A. pratensis* at corresponding seasons. The light coloured edges to the feathers of the upper parts of *A. cervinus* (they appear to be nearly white in some cases) give it a bright look; it is a brighter, more brilliant, and more striking bird than *A. pratensis*, but not, I think, a lighter coloured bird. Mr. Coburn writes that the resemblance is striking between an example of *A. pratensis* killed in April and his example of *A. cervinus*. As I write I have before me my Egyptian winter-killed *A. cervinus*, and an adult male *A. pratensis* killed on the 30th April, but there is no striking resemblance between them. In the general colour of the upper parts they certainly approach one another more closely than do examples of each species both in winter plumage. But *A. cervinus* is more distinctly marked on the back, and, not to mention other points of difference, the arrangement of the markings on the throat and upper breast is different. In my experience this last difference is more or less noticeable in all stages of plumage. In summer it is remarkable in live birds seen at a little distance (I have several times seen the two species within an hour of each other), and I can see no reason why it should not be equally noticeable in winter. A comparison of the skins in my collection shows that the differences alleged by Mr. Coburn to exist in the size of the bill, and the colour of the (dried) legs of the two species, cannot invariably be relied upon, although possibly *A. cervinus* will be found to have the bill usually smaller than average examples of *A. pratensis*. As I have only four examples of *A. cervinus* to compare, I can at present only say that the bills of these are not smaller than the bills of some of my examples of *A. pratensis*. The size of the bill varies in both species, and birds of both species likewise vary more or less in size. I do not think there ought to be any difficulty in distinguishing (so far as plumage is concerned) between examples of *A. cervinus* and *A. pratensis* in any stage of plumage, when one has the specimens in one's hands. And, given a clear view at a reasonable

distance, taking the size of the bird into consideration, it ought not to be difficult to recognise *A. cervinus* in a wild state. The first time I saw this species I was not at all expecting to meet with it; but I saw at once that it was a Pipit I had not met with before, although it was rather shy, and it was not until the following day, when I made a special search for the stranger, that I was able to secure a specimen. In conclusion, I wish to say that this note is not intended as a hostile criticism of Mr. Coburn's careful account of his specimen, but merely as a statement of the result of my own observations upon a species which has an especial interest for British field ornithologists, since it is not unlikely to occur on our coasts any season. And as I have been studying Pipits carefully for some years past, I may perhaps be allowed to add here that I cannot help thinking that one at least of, if not both, the so-called Scandinavian Rock Pipits, figured in Mr. Booth's 'Rough Notes,' ought to be referred to the Alpine or Water Pipit (*Anthus spiolella*). For I have never yet been able, in any of the three Norwegian museums which I have visited, or elsewhere, to see a Rock Pipit killed in Scandinavia (*A. rupestris*) at all like Mr. Booth's birds; whereas the bird in the foreground of the plate does not differ in any way from *A. spiolella* in summer dress. I should say that I judge only from the plate, and have not seen the bird; but I think one is quite safe in taking the figures in Booth's plates as accurate representations of the specimens in his collection.—O. V. APLIN (Bloxham, Banbury, Oxon).

Anthus cervinus and A. pratensis.—Some years since, when in Heligoland, in looking at some examples of these species, Mr. Gätke pointed out that the former might be distinguished, in the autumn plumage in which it visited Heligoland, by the rump being striped; in *pratensis* it was uniform. In the 'Birds of Heligoland' (English edition), the author says:—"It is distinguished, however, from both the Tree and the Meadow Pipit by the almost black broad central marking of the longest pair of the under tail-coverts, which in the other species in question are of a uniform whitish rust-colour." I agree with Mr. Coburn (p. 256) that a living wild bird in nature is a very different thing to the most skilfully prepared skin; at the same time I think it would be utterly impossible for any ornithologist, either with or without a glass, to distinguish amongst a flock of *A. pratensis* an example of *A. cervinus* in winter plumage.—JOHN CORDEAUX (Great Cotes House, R. S. O., Lincoln).

Occurrence of the Wall Creeper in Sussex.—Mr. William Mitchell, of 'The Look-out,' Winchelsea, invited me, while on a visit to that town on July 31st, to inspect a bird in his possession, "the like of which he had never seen before." His description of the bird's appearance as it climbed about a ruin, and of the crimson and white on its wings, rendered identifi-

cation almost certain even before seeing the specimen, and on reaching the house I at once saw that the "strange bird" was an example in breeding plumage of the Wall Creeper, *Tichodroma muraria* (Linn.). His attention was called to it by some men who had noticed its bright colours, and he shot it near the ruin of the Grey Friars' Chapel, on the property of Major Stileman. A plate of this picturesque ruin, with the adjoining house of its owner, may be seen in the late W. W. Cooper's 'History of Winchester,' facing page 149. The lower picture shows the lawn over which the bird was flying when shot just after it had left the ruin to the right. It was set up by Gasson of Rye. It is unfortunate that no note was made of the date of the occurrence, but Mr. Mitchell feels sure it was in late spring about ten years ago, *i.e.* about 1886. This is the third recorded occurrence of the Wall Creeper in Britain, and is an addition to the Sussex avifauna. The specimen is now in my possession, and it will be exhibited at a meeting of the British Ornithologists' Club.—W. RUSKIN BUTTERFIELD (St. Leonards-on-Sea).

Birds nesting in August.—Although the nesting season is usually supposed to be long past by the month of August, at all events for most inland species of birds, I have never had much difficulty in finding a few late nests in that month, and even in September. Accordingly on Bank Holiday, Aug. 3rd, whilst staying in a corner of Cambridgeshire, I took my host's son, a boy of twelve, out for a walk, to try and show him a nest or two, and was even more successful than I anticipated. In less than two hours we found the following:—Two Yellowhammer, each with 3 fresh eggs; 3 ditto, with 4, 3, 4 eggs incubated; 1 Linnet, with 5 fresh eggs; 6 ditto, with 4, 4, 4, 5, 3, 4 eggs incubated; 2 ditto, with young, one brood just hatching, the other nearly fledged; 3 Greenfinch, with 4, 3, 1 fresh eggs; 4 Turtle Dove, each with 2 fresh eggs; 2 ditto, each with 2 eggs incubated; 2 ditto, each with 2 young; 2 Wood Pigeon, with 1, 2 fresh eggs; 3 Hedgesparrow, each with 1 addled egg. I may add that there are very few trees and hedges in the district, and the foregoing were all found in a small plantation of blackthorn and hawthorn bushes, and in a hawthorn hedge bounding an open farm of nearly 1000 acres.—ROBERT H. READ.

The Hawfinch and Turtle Dove in Lincolnshire.—With reference to Mrs. Anderson's notes on the Hawfinch nesting at Lea Hall (p. 257), I may add that it is now recognised as a regular nesting species in several localities in the county. In the winter of 1895-6 I met with old birds in three places in North Lincolnshire where it has not been previously recorded. In the present summer a young brood has been hatched off somewhere about my premises, but I was not aware of this till the young had left the nest. Subsequently the parent birds and their brood laid heavy toll on the peas. In driving about the country, or travelling by rail, during the present summer I have seen more Turtle Doves than in any

previous year: the increase in their numbers in the northern division of the county is most marked.—JOHN CORDEAUX (Great Cotes House, R. S. O., Lincoln).

Increase of the Hawfinch around Bath.—During the past spring and summer I have heard and seen the Hawfinch (*Coccothraustes vulgaris*) in unusual abundance in different localities in this district. That it has nested fairly plentifully this year I am certain, for I have seen young birds in several gardens in the neighbourhood feasting on the peas, much to the annoyance of the gardeners. In the winter months I heard reports that large numbers of Hawfinches were daily to be seen frequenting the Clifton downs.—C. B. HORSBRUGH (4, Richmond Hill, Bath).

Song of the Icterine Warbler.—When residing in Dresden in 1886 I had almost daily opportunities of listening to the song of the Icterine Warbler (*Garten Laubsänger*), and with the experience then gathered came to the conclusion that the song in compass, quality, and sweetness was not to be compared to that of the Nightingale or Blackcap, and yet it is a remarkable song, and not to be forgotten. If any readers of this care to refer back to 'The Zoologist' for 1886, pp. 356–357, "Wayside Notes from the Continent," they will see what my impression was at that time of the song of this charming little warbler.—JOHN CORDEAUX (Great Cotes House, R. S. O., Lincoln).

Hedgesparrow breeding on the Bass Rock.—Perhaps you may consider the nesting of the Hedge Accentor on the Bass Rock as worthy of insertion in 'The Zoologist.' On May 16th I found a nest of this bird containing four eggs. The nest was placed under an overhanging tuft of grass which grew on a low rock-face. This, I believe, is the first case of the Hedge Accentor breeding on the Bass. I may mention also at the same time that I found a Blackbird's nest with four eggs in one of the beam-holes in an old house on the rock.—A. H. MEIKLEJOHN (St. Andrews, N.B.).

Eared Grebe in Somerset.—A few days ago (July 23rd), I had brought to me the remains of an Eared Grebe, *Podiceps nigricollis*, which had been found in an old clay-pit not far from this town. Unfortunately it had been dead so long that it was perfectly useless; but I do not know that the bird has ever been recorded as having been found in Somerset before.—H. S. B. GOLDSMITH (King's Square, Bridgewater).

Nightingale at Scarborough.—An undoubted Nightingale took up its residence in May last at Throxenby Mere, at the edge of Raincliffe Wood, near Scarborough. It was first heard by Mr. H. Head on May 8th, and was afterwards seen and examined, with the aid of glasses, on May 13th by Mr. W. Gygell, a competent observer, and one well acquainted with the bird in the south. It was heard by myself on May 15th, 18th, and 20th, the last date on which it was heard to sing. I saw the bird and examined

it with glasses on May 31st, and it was subsequently reported to have been shot with a catapult on the evening of that day.—W. J. CLARKE (44, Huntriss Row, Scarborough).

[With regard to the occurrence of the Nightingale in Yorkshire, the authors of the very useful 'Handbook of Yorkshire Vertebrata,' 1881, write of it (p. 20) as "a summer visitant of regular occurrence in very limited numbers in the neighbourhood of Barnsley, Wakefield, York, Beverley, Patrington, Brough, Selby, and Doncaster, arriving early in May. West and north of the frontier formed by these towns it is only of exceptional occurrence, and a line drawn from Huddersfield through Bradford, Otley, and Ripon to Baldersby, Bagby, and Sessay near Thirsk, and thence to Flam-borough Head, will include all the localities for which there is satisfactory evidence of its ever having occurred or bred, and also defines the extreme northern limit of its distribution in Britain." On May 8th, 1866, as we find by reference to an old note-book, we had the pleasure of listening to a Nightingale in full song in a copse by the lake at Walton Hall, four miles from Wakefield.—ED.]

Albino Wheatear and Swallow.—Four white Wheatears, *Saxicola ananthe*, and a white Swallow, *Hirundo rustica*, all birds of the year, frequented a quarry in the cricket-field in this neighbourhood during the present summer.—W. RAMSBOTHAM (Meale Brace Hall, Shrewsbury).

Iceland Gull in Co. Sligo.—You may think fit to record in 'The Zoologist' that I picked up an adult Iceland Gull, *Larus leucopterus*, Fab., on April 5th last, at Mullaghmore, Co. Sligo. It was dead, and had apparently been shot at, having both legs broken and wounds in the neck and stomach. I cleaned off the maggots on it and salted it inside, and sent it to Mr. Williams, of Dublin, who identified it. Is it not unusual for it to be obtained in Ireland so late in the spring?—CHARLES LANGHAM (Tempo Manor, Co. Fermanagh).

Cuckoo's Egg on the Ground.—I was interested in reading the note on this subject in your July number (p. 259), for a similar occurrence came under my notice in June, 1895. An ornithological friend, Mr. W. Gynge, was birdsnesting on Seamer Moors, when he noticed laid on the ground a quantity of feathers, as if some bird had been attacked and devoured by a hawk. On examining the feathers he found them to be those of the Cuckoo, and further examination revealed an egg of this bird lying underneath them and quite uninjured. The feathers comprised not only body but tail-feathers and primaries and secondaries from the wing. The egg was not incubated. In this case the probability appears to be that the parent had either been surprised just after depositing her egg on the ground, or on being attacked had deposited the egg during the death-throes.—W. J. CLARKE (44, Huntriss Row, Scarborough).

FISHES.

The Pogge (*Agonus calaphractus*) at Scarborough.—A nice specimen of this curious little fish was taken by Mr. Harrison in a rock pool on the North Shore, Scarborough, on July 26th. Although stated by Messrs. Clarke and Roebuck, in their 'Vertebrate Fauna of Yorkshire,' to be common along the Yorkshire coast, this is the first example that either its captor, myself, or other members of the local Naturalists' Society, have met with in this neighbourhood.—W. J. CLARKE (44, Huntriss Row, Scarborough).

Power of Electrical Fishes.—Prof. d'Arsonval has been making a series of experiments with the Torpedo or Electric Ray. He found that fish 30 centimetres in diameter could give out a shock of twenty volts. He ingeniously applied some small electric lamps to the fish, and they were lit by the discharge from its body. In some instances he states that the discharge was so powerful as to carbonize the lamps. The electric current generated by the Torpedo is sufficiently powerful to enable it to procure food by killing small fish with which it comes in contact, but diminishes as its strength decreases. The maximum electric discharge is stated to be as high as 120 volts.

The Opah, or King-fish, off Aberdeen.—There was lately on view at Messrs. J. and T. Sawers', fish merchants, Belfast, a fine specimen of the Opah or King-fish, *Lampris luna*, caught off the coast of Aberdeenshire. It weighed 70 lbs., was about 4 ft. long, and measured $2\frac{1}{2}$ ft. at the broadest part. In shape this fish resembles the Sunfish, and its hues are very brilliant. The back and sides are of a rich green, with purple and gold reflection, while the under parts are yellowish green. There are some white spots above and below the lateral line, and the fins are vermilion. The discovery of this fish in English waters is comparatively of recent date, and the title "Opah," by which it is sometimes known, was obtained in somewhat curious fashion. A name not being obtained for one of the first specimens secured, it received this designation on the authority of an African prince, who stated that it was known by this title in his own country, though the presence of the species in African waters is more than doubtful. In general outline this fish, though considerably thicker in the body, is not unlike the common Sea Bream. Its colouring is gorgeous in the extreme, and rather reminds us of the varied hues common to the occupants of tropical waters, than of the sober tints of British fishes. The "Opah," or Kingfish, inhabits the deeper waters of the North Sea, and is common off the coast of Norway. A good figure of it is given by Day, in his 'Fishes of Great Britain and Ireland' (vol. i. p. 118), and an enumeration of the specimens recorded to have been captured on various parts of our coast, including some half-dozen Irish examples.

Short Sunfish near Scarborough.—On July 29th, whilst a fisherman named Albert Reeve was proceeding to take up his crab-pots, about a quarter of a mile out to sea, off the Peak, a little to the north of Scarborough, he noticed at some distance from his boat something projecting above the water, which he took to be the buoy attached to his lines. On approaching he discovered the object to be a strange fish floating, apparently asleep, and having "gaffed" it he got into his boat. On reaching shore he brought it to my shop, when it turned out to be a Short Sunfish, *Orthogoriscus mola*. The extreme measurements were 18 inches long, 12 inches wide, and 26 inches from tip to tip of fins. The stomach, on dissection, proved to be empty, excepting a little yellowish fluid. On the gills were found a number of the large parasite, *Lernæa branchialis*, which is usually found infesting this fish. It is a formidable creature, about an inch in length, and must be a source of much discomfort to the unwilling host.—W. J. CLARKE (44, Huntriss Row, Scarborough).

[Borlase, in his 'Natural History of Cornwall' (p. 260), remarks that this fish is called by Ray and others the "Sun-fish," as being round, and emitting a kind of splendour in a dark room; by others (as Rondeletius) the "Moon-fish," because not only round and shining by night, but having the shape of the crescent betwixt its little pectoral fin and the eye. Referring to one captured at Ilfracombe, Gosse described it (Zool. 1852, p. 3579) as moving slowly, with a waving motion, from side to side, like a man sculling a boat,—to use the comparison of the sailor who helped to take it,—the back fin appearing above water. The fish permitted the boat to come close up without exhibiting alarm, even when the boatside came in actual contact with it. The men made a bowline-knot and slipped it over its head, tightening it before the dorsal and anal fins, so that the knot came in the middle of its side. Thus they hauled it in, not without a wetting, for with a flapping action of the ample fins (again a kind of sculling) it scooped up the water and threw it over them and into the boat. A writer in 'The Field' (Feb. 4th, 1882), reporting the capture of a Sunfish near Plymouth, added that a friend cut off a large portion, and sent it as a present to an acquaintance who was fond of Turtle-soup. It was boiled by his cook, and he asserted that it was the best Turtle-soup he had tasted for a long time, having that delicate green tinge always characteristic of the best Turtle. As no ill results ensued, it was supposed the fish must be wholesome.—ED.]

MOLLUSCA.

A Carnivorous Habit in *Limax*.—Despite the destructive habits of the genus *Limax*, it is still possible that the species may do good, for interesting observations have been made upon the American *Limax campestris*, Binney, which was seen feeding upon plant-lice. Prof. Webster, of the Ohio Agricultural Experiment Station, U.S.A., kindly sent me the 'Bulletin' (68)

of his Station, in which he records this new and interesting habit in *Limax*. "I was somewhat surprised," he says, "one day to observe one of the slugs stretch out and grasp a plant-louse, hundreds of which were swarming on the leaves of the dock, where they were breeding in myriads. The slug not only disposed of one Aphis, but another and another followed in quick succession." He also states that they "climbed the leaves and stems of the wheat to the height of eight or ten inches, and, crawling along the larger leaves, cleared them almost completely of the Aphides." On receipt of this interesting note I placed a number of *L. agrestis* in a breeding-cage with numbers of hop-lice, *Phorodon humuli*, and found that three or four soon commenced feeding on them; but on placing lettuce-leaves in the box they left off eating the lice and devoured the leaves, but some of them continued to prefer the carnivorous diet.—
F. V. THEOBALD.

NOTICES OF NEW BOOKS.

The Wild Cat of Europe (Felis catus). By EDWARD HAMILTON, M.D., F.L.S. Illustrated by P. & P. J. Smit. 8vo, pp. i-xxi, 1-99. London: R. H. Porter. 1896.

CONSIDERING the amount of material which is available for a monograph on this subject, we must confess to considerable disappointment with the book before us. It is by no means exhaustive, nor are the materials, so far as they go, well arranged. Indeed, it would seem in some places as if the pages of the author's manuscript had become misplaced before printing. Thus we find the bibliography of the subject at the beginning of the volume instead of at the end (though this perhaps is not very material), and the description of the animal itself is in the middle of the volume (p. 37) instead of at the commencement. The authorities cited, of which a very imperfect list is given in the bibliography, are quoted apparently at haphazard as the author happened to come across them, and not in chronological sequence, as one would expect to find them. Thus we see Prof. Rolleston followed by Aldrovandus (pp. 80, 81), Charles St. John followed by Gesner (pp. 93, 94), Donovan preceded by Harrison Weir (p. 88), and a sentiment of Mrs. Janet Ross (1889) sandwiched between two extracts from Le Normant's work on Greece (pp. 82, 83).

In justification of our remark that the bibliography is incomplete, we may remark, to mention a score of names off-hand, that it does not include any of the following, though many of the writers are mentioned in the text:—Bartholomæus, Chapman, Abp. Corboyle, Sir Joseph Fayrer, Hunt, Huxley, Lindsay Johnson, Kennedy, Lartet, Latouche, Lord Lilford, Sir John Lubbock, Morton, Murray, Palladius, Poulton, Rope, Sanford, Scott (Field Sports), and Selys Longchamps. This is unfortunate, but still more irritating to the reader is the constant omission to give references to the authorities for statements of value.

Commencing with the synonymy (p. 1), a list of vernacular names is given on the next page, to which might be added, as the Russian, Greek, and Polish names are given, the Arabic *quit*, and the Turkish *kedi*. Discussing the etymology of the word "cat," the author gives us the old High German, though not the Anglo-Saxon. Nor does he give the origin of the name "puss," concerning which an ingenious suggestion has been made (Zool. 1879, p. 487).

In his section on geographical distribution, which is inconveniently dealt with in two places (pp. 4-5 and 31-36), some of the remarks are a little inconsistent. For instance, on p. 5 we read that at the present time the Wild Cat "may perhaps occasionally still be found" in Spain, while on p. 34 it is stated to be numerous in Andalucia; and (on p. 35), on the authority of Messrs. Chapman and Buck, "common throughout Spain wherever rabbits abound." As regards Greece, very little information is given. The author might have found some interesting details in Heldreich ('Faune de Grèce,' 1878), who is inclined to recognise the Wild Cat in the *Ailurus* of Aristotle.

As to its ancestral descent (p. 6), Dr. Hamilton thinks it derived "in all probability directly from one or both of the species of Cat whose osseous remains have been found in the Pleistocene deposits both in this country and on the Continent"; although Prof. Boyd Dawkins and Mr. W. A. Sanford, in their "British Pleistocene Mammalia" (Trans. Palæont. Soc. 1872-73) contend that the bones from the Liège caverns and from Bleadon Cave belong to a larger animal than *Felis catus*, and conclude that a Wild Cat closely allied to *F. caffer* lived in Northern Belgium and France in the Pleistocene period, and probably also in

Britain. They remark "there is nothing unreasonable in the suggestion of a Cat now found only in Africa having once ranged over Europe, since the Spotted Hyæna, the Hippopotamus, and the Panther were members of the Pleistocene fauna, as well as being now associated with *Felis caffer* in Africa." If this supposition be correct it would seem, as Dr. Hamilton observes, that the smaller species was enabled to survive throughout Europe during all the geological changes, owing to its natural food (in the shape of the leporine and other rodent forms) continuing to exist, for, according to Owen, there is no difference between the fossil bones of the Pleistocene species of *Lepus* and *Arvicola* and those of the present time; while the larger species, from some cause as yet unexplained, became extinct. It would have been more convenient, we think, if at this point (p. 16) Dr. Hamilton had introduced the comparison of skulls and other bones which he has instituted, instead of deferring (to p. 47) his consideration of these points, the most valuable in his memoir, for the sake of interposing (pp. 16-30) his collected records of *Felis catus* in Britain and on the Continent.

This section is interesting enough, although readers of 'The Zoologist' who happen to bear in mind the many records of British Wild Cats which have been published during the last fifty years in this journal will notice many gaps which might have been filled with a little more research, and will regret the omission of references to many of the records quoted.

Some of the extracts furnished by Dr. Hamilton must have been quoted by him second-hand, for they are not only inaccurate, but in some cases valueless. Take, for example, the following sentence on page 16:—"In the Booke of St. Albans, printed by Wynkyn de Wode [Worde] in 1496 [why not quote the first edition, 1486, as being earlier?], the Wild Cat is mentioned among the 'Bestys of chase sweete and stynking.'" Now, had Dr. Hamilton referred to the work he purports to quote, he would have discovered that amongst the "Bestys of the chace of the swete feute & stynkyng" (to quote correctly), the Wild Cat is *not* mentioned, and the quotation, therefore, is valueless.

In the next sentence Dr. Hamilton observes:—"Three years previously [how did he fix the date of an undated folio?] he, *i.e.* Wynkyn de Worde, printed a translation, by Thomas Buller, of 'Bartholomæus de Proprietatibus Rerum,' in which the Wild

Cat is likened to a Leopard," &c. Now the translation of the Latin work of Bartholomæus de Glanvilla (or Glanville, as we may call him), which Wynkyn de Worde printed (probably in 1495), happens to have been made by John Trevisa. From this we conclude that Dr. Hamilton has not looked very closely into the matter. Nor is it really of much importance; for whoever the translator was, or whatever the date of publication, the extract quoted is not worth the trouble of transcription so far as English records of the Wild Cat are concerned. It may be of interest, however, to note, *en passant*, that this particular folio from the printing press of Wynkyn de Worde happens to be the first book which was printed on paper made in England. It was manufactured at Hertford, by one John Tate, whose name is mentioned in the 'Prohemium.'

But this by the way. We cannot follow Dr. Hamilton through his collected "records of the Wild Cat in England and Wales" (pp. 16-21) "and Scotland" (pp. 22-26), for to do so would necessitate our suggesting several corrections and numerous additions, which for the present must be reserved. With regard to its alleged existence in Ireland, Dr. Hamilton quotes Thompson's remark (Nat. Hist. Ireland, vol. iv.) that "it cannot with certainty be given as a native animal," and recapitulates the negative evidence which he had previously placed on record (Proc. Zool. Soc., 1885). He concludes that "further investigations since Thompson's time all tend to prove the non-existence of this species in the sister island."

The volume concludes with a section on "the interbreeding of the wild and tame races," and another on "the propensity of the domestic race to assume the colour of the wild race." In support of the latter proposition, the truth of which has often been forced upon our notice, he quotes Darwin and Wallace as authorities for the statement, but does not, as he might have done, furnish the reason in Darwin's own words, namely, "oddly coloured and conspicuous animals would suffer much from beasts of prey, and from being easily shot" ('Variation of Animals and Plants,' vol. ii. p. 33, ed. 1868). Those of our readers who are accustomed to pheasant shooting must have frequently remarked how quickly a tortoiseshell or black-and-white cat is detected in covert, and how inconspicuous, even when in motion, is the animal which mimics in colour the true *Felis catus*.

We cannot congratulate the author on the figure of a Wild Cat which forms the frontispiece to his volume; nor can we believe that he himself is satisfied with it. He must have seen far too many Wild Cats in the course of his shooting excursions in Scotland to regard this as in any sense a portrait. The expression is tame to a degree, the markings are too faint, and the tail is neither short enough nor thick enough to pass muster for the true Wild Cat.

Notwithstanding the shortcomings which, as we have said, have caused us some disappointment, Dr. Hamilton's interesting contribution towards the history of a British animal fast approaching extinction, is one which our readers, we feel sure, will peruse with both pleasure and profit.

Sport in the Alps in the Past and Present. An account of the chase of the Chamois, Red Deer, Bouquetin, Roe Deer, Capercaillie, and Blackcock; with personal adventures and historical notes, and some sporting reminiscences of H.R.H. the late Duke of Saxe Coburg-Gotha. By W. A. BAILLIE GROHMAN. 8vo, pp. i-xv, 1-356. With numerous illustrations and photographs from life. London: Adam and Charles Black. 1896.

CONSIDERING the large number of books which have been written during the last forty years about climbing and adventure in the Alps, it is curious that up to the present time so little has been published upon Alpine sport. At the present moment we can recall but a single volume on the subject. It has long reposed on our book-shelf, and has been read more than once—Charles Boner's 'Forest Creatures,' a delightful book in its way, though a small one, the work of an enthusiastic sportsman possessing the true instincts of a naturalist, with an eye always for the picturesque. That little volume, however, deals only with a small district, of what the "climber" of the present day would describe as the foot-hills of the real Alps.

Mr. Baillie Grohman is to be congratulated on the attempt which he has just made to fill this void in sporting literature. It is true that his book leaves almost unnoticed the very country which to the alpine climber as well as to the ordinary tourist possesses the greatest attraction, namely, Switzerland. But he is

quite aware of this, and gives his reasons for confining his remarks to the central and eastern Alps, dealing with the western only to include that small portion on the southern, or Italian, side which is the haunt of the Ibex or Bouquetin. The first and best reason is that the Swiss Alps harbour comparatively few Chamois, and no Red Deer; the second and more personal reason given is that "Switzerland, since fashion has made it the goal of ever-increasing crowds of holiday makers, has lost its charm for an admirer of alpine solitude and unsophisticated mountain life." To view nature amid surroundings to which one is condemned by this invasion is not an unalloyed pleasure. Fortunately there are wide and beautiful districts left in the Alps which are as yet uninvaded by fashionable crowds, and to these byeways Mr. Baillie Grohman invites us to accompany him.

As the title of his book implies, his object is "sport"; and were it nothing but a record of sport, we should not feel called upon to review it at much length in a journal devoted to natural history. But incidentally we come across such good descriptions of the haunts of wild game, and such interesting statements concerning its abundance or otherwise, and geographical distribution, that we are tempted to give a longer notice of the work than might otherwise appear justifiable.

As the title above quoted sufficiently indicates the contents of the book, we may plunge at once *in medias res*. Several authorities on Chamois state that 300 years ago these animals were scarcer in the Austrian and Bavarian Alps than they are at the present time, and, in proof of this contention, aver that the old game registers of noble sportsmen afford little or no evidence of their former abundance. In this our author does not agree, for what is true in the case of the Roe Deer (*viz.* that 300 years ago there was but one Roe to every six Red Deer, while to-day this order is reversed), does not hold good to anything like the same extent for the Chamois. The extermination of the Bear, the Wolf, the Lynx, and the Wild Cat, all deadly foes of the Roe Deer, and accountable for its decrease, was a matter of less moment to the Chamois, owing to the elevation and barren nature of its haunts.

It is true that the greatest enemies of the Chamois, namely the Lammergeier and the Golden Eagle, have well nigh shared

the fate of the wild animals above mentioned, but, on the other hand, the primitiveness of firearms made man then a much less dangerous foe than he is at the present day. The truth is that to a great extent the chase of the Chamois was left to the natives of the Alpine valleys, while men of position, who enjoyed all the sport they cared for in forests full of Red Deer and Wild Boar, did not trouble themselves about a chase which presented so many difficulties, and was enshrouded in so much superstition. *A propos* of the Lammergeier Mr. Baillie Grohman states that its former abundance is shown by the registers kept in the monastery of St. Bartolomeo. According to an inscription upon a large wooden tablet there dated 1650, upon which two Lammergeiers are pictured life-size, one Hans Duxner killed one hundred and twenty-seven of these birds, while Urban Fürst-müller, a hunter and fisher, killed twenty-five Bears and forty-three Lammergeiers, and his two sons captured thirty-one of the latter.

According to the official report which is annually drawn up for the Austrian Government, the number of Chamois killed in an average year (say 1892) in the Austrian Alps amounted to no less than 8144 head, or more than three-fourths of the total in the whole Alps. Tyrol is at the head of the list with 2392, then Styria with 2176, and next Salzburg with 2039. In the Bavarian Highlands over 1000 Chamois, it is believed, are shot annually. Italy and Switzerland, with a few in the French Alps, bring the annual total for the Alps to over 11,000 head. We are accustomed to read the statement by irresponsible writers that the number of Chamois has within the last fifty years greatly decreased, but Mr. Baillie Grohman is confident that this is not the fact, and gives statistics which confirm his view.* He adds

* We find amongst our memoranda on Chamois a letter from a correspondent at Geneva, dated March 26th, 1879, in which are these remarks:—"In 1878, 779 Chamois were shot in the Grisons, of which number 210 were killed in the district of the Irn, and 101 in that of the Albula, the remainder in other parts of the canton. There were also killed 4 Bears, 5 Vultures, 4 Eagles, 15 Owls, 69 Sparrow Hawks, 324 Magpies, and 1 Otter. In comparing this statement of the Chamois shot during the past season with those killed in former years, it would appear that instead of their number diminishing, as was feared, it is considerably on the increase in those districts in which the pursuit of them is permitted by law."

that in the Alps about three-fifths of the Chamois are killed by "driving," the rest by "stalking," and the two methods are described at considerable length, and, we may add, with considerable skill. We must confine attention, however, to what Mr. Baillie Grohman has to tell us of the natural history of the animals of which he treats.

As to the seasonal change of colour he writes:—

"Between the appearance of a Chamois in July (when the shooting season opens) and that of the same animal in December (when it closes) there is a vast difference. The grayish ochre-brown colour and the short hairs of the summer coat have turned into an almost black shaggy garb with hairs three times as long, that give the animal, particularly an old buck, a very burly appearance. Along the backbone of the male the hairs grow in winter to a great length, and except at the tip, where they turn a yellowish white, they are of a glossy black, and stand upright, waving in the wind. These long hairs, most carefully bunched together, form the much-prized *Gems-bart* or 'chamois beard,' which ignorant tourists suppose grows on the lower jaw of the male Chamois! The longer the hairs and the whiter the tips, the more valued is the bunch."

It is not to be implied from this that the old male Chamois is not bearded, but only that imitations are oftener seen than the real article.

"Though the beard reaches its highest perfection only during or after the rut, which commences about the middle of November, keepers and beaters will pounce eagerly upon a buck killed in October, for even at that time the beard, though short and not of the peculiar gloss acquired later on, has pecuniary value."

The Chamois is apparently not subject to much variation in colour. In Styria and Salzburg individuals are to be met with that even in summer are much darker than their fellows, and have hardly any white about the head. These are called *Coal-chamois*, and are much prized. In Tyrol, on the other hand, the silver bucks are a freak of nature, delighting the heart of the ardent sportsman. They never get such a dark winter coat as the rest, and there is a peculiar silver shimmer about the hair. Albino Chamois are even rarer. The author mentions but two instances known to him of white Chamois being shot (p. 32). For a second edition he may note that Von Tschudi, in his important work on the Alps, describes an albino Chamois which

was killed in 1853 in the Grisons above Scuolms, a small village on the Hezenberg, between Bonaduz and Versam. In this animal even the hoofs were white, and the irides rose colour. The horns were a little more than an inch in length; the hair very thick and close, particularly about the neck. Several other instances of the occurrence of white Chamois will be found recorded in 'The Zoologist' for 1878, p. 337; and 1886, p. 331.

Partially white Chamois are also rare. The author mentions one with pure white hind-quarters which was shot by a friend near Kufstein. For a second edition he may note that another similarly marked, an eight or ten year old buck, was shot by Forstwart Reisigl at Vomper Loch, Tyrol, in the autumn of 1882. It is figured and described in 'Der Weidmann,' July 31st, 1896 (Band xxvii., No. 45).

When quoting the remarks (more or less fabulous) of Jacques du Fouilloux, the great French sportsman of the sixteenth century, about a kind of wild goat which he calls *Ysarus* (p. 28), allusion might have been made to the fact that the Chamois of the Pyrenees is known as *Izard*. We believe it is not specifically distinct, but certain differences have been observed which will be found enumerated by Schinz in his 'Europäische Fauna' (vol. i. p. 86), and are translated by the late Lord Clermont in his 'Guide to the Quadrupeds of Europe,' 1859 (p. 140).

With regard to the horns, which are borne by both sexes, the longest pair known to collectors measured over the curve a trifle more than twelve inches in length, which is about one-third more than the average length. Mr. Baillie Grohman has seen two specimens of this abnormal length: one in the late Duke of Coburg's collection; the other in the collection of Count Arco Zinneberg at Munich. The author himself once shot a buck in South Tyrol with eleven-inch horns, four inches in girth. Ten-inch horns, he says, are not too common, and are carried by perhaps one buck in fifty. He adds, as an observed fact, that Chamois frequenting a limestone formation have bigger horns than those found in slate or granite mountains, and this confirms what has been noted in regard to the growth of Red Deer antlers.

At page 34 we note some remarks on the rarity of a Chamois with four horns, and Mr. Baillie Grohman is of opinion that in

the majority of such reported cases fraudulently prepared heads have been made up to deceive the unwary collector of hunting trophies. He does not make any allusion to a reported four-horned Chamois which was figured and described in 'The Field' of Dec. 13th, 1879, and concerning this we should be curious to know his opinion.

There is one point in connection with the natural history of the Chamois on which Mr. Baillie Grohman does not enlighten us. We do not find any mention of the period of gestation in this animal. Authorities differ on this point. Lord Clermont states, in his 'Guide to the Quadrupeds of Europe' (p. 139), that the female goes with young between seven and eight months, and produces one at a birth. The Marquis de Cherville, in his excellent 'Dictionnaire des Chasses,' 1885, writes of the Chamois (p. 49): "Les femelles portent cinq mois, et mettent bas en Avril un petit, rarement deux." According to Charles Boner twenty weeks is the period.

We pass over the next hundred and odd pages, devoted to an account of Chamois hunting both by "stalking" and "driving," for the purpose of seeing what our author has to say of the Red Deer of the Alps, and come to a chapter (Chapter IX.) which is if possible even more interesting than those which precede it.

In Austria and Germany the chase of the Red Deer has not undergone any such radical changes as in France and England; indeed, in the Alps, according to our author, it is conducted to-day in almost precisely the same manner as in the Middle Ages. Upon two important facts historical research throws a strong light, *viz.* upon the great diminution in the number, and an almost equally great deterioration in the size of stags that has taken place within the last 250 years. We have not space to quote the statistics given on this subject, but they are so curious that those of our readers who are deer-stalkers will find them well worth perusal. The illustrations which accompany them are valuable, too, as enabling us to compare some of the antlers of the past with those obtainable at the present day. We are very glad to learn from a footnote on p. 172 that the author proposes to reproduce a series of twenty-one plates, from an illuminated MS. Chronicle of the Duke Casimir of Coburg (1564-1633), which were painted more than 250 years ago by the Coburg

Court painter, Wolff Pirkner. One or two of them are given as full-page illustrations, though on a reduced scale, in the volume before us, and are most curious and instructive.

Chapter XIII. is devoted to the Roe Deer, and opens with the surprising statement that in Austria alone, excluding Hungary, between 68,000 and 69,000 Roe are shot *annually*, and that nine out of every ten are killed with the rifle. Counting Hungary, we are told (p. 246) that the annual bag of Roe exceeds 100,000 head. The province at the head of the Austrian list is Bohemia, where in 1892 (an average year) 12,920 Roes were shot, Lower Austria coming next with 11,683. Much interesting information follows on the chase of this animal in past and present times, but as the species is comparatively well known we need not stop to quote passages which would otherwise deserve notice. Some curious heads are figured, but none of which the types have not already been described in an illustrated article on Abnormal Heads of the Roe Deer in 'The Zoologist' for 1884 (pp. 353-366).

The chapter which will have the greatest novelty perhaps for most readers is that devoted to the Ibex, Bouquetin, or Steinbock as the Germans call it (Chap. XIV.). This animal is comparatively so little known except to the exceptionally fortunate few who pursue it in its natural haunts that the account given of it is especially welcome, the more so because of its increasing rarity. In the Tyrol it became practically extinct towards the end of the last century, though isolated examples have been met with very much later. For example, a fine male was spied by a Tyrolese chamois-hunter in the mountains near Nauders so recently as 1874. The Carpathian Mountains are said to have once been the home of the Ibex, as they still are of the Chamois, but Mr. Grohman states that he has never come across any documentary evidence to support this allegation.

As compared with the Chamois, the Ibex is a very much heavier animal. An adult male will weigh 200 lb., the doe less than half that. The weight of an adult male Chamois is about 65 lb., the doe being about a fifth lighter.

In 1821 an enthusiastic naturalist (Zumstein by name) prevailed upon the Piedmont Government to pass stringent laws for the protection of a small herd of Ibex which had found a refuge in the heart of the Graian Alps, and his successful exertions,

followed thirty-five years later by the personal efforts made in the same direction by King Victor Emmanuel, resulted in effectually saving this splendid animal from extinction in that Alpine retreat. It is stated that when in 1877 the king visited for the last time that part of the country where he had annually shot from 50 to 60 Ibex in the season, there were estimated to be from 500 to 1000 of these animals in that unique preserve. Fifty-five keepers held ward and watch in those barren solitudes over their precious charges; and the officers of the law, says Mr. Grohman, "had but few opportunities to inflict the nine years' imprisonment which was, and, for all I know to the contrary, still is, the punishment for killing one of the king's Bouquetins."

The last chapter but one (Chap. XV.) deals with Capercaillie and Blackcock shooting in the Alps, and the last chapter contains some "Early Recollections of Sport in the Alps."

We regret that want of space precludes us from following our author further. His book is one that we may cordially recommend to the perusal of our readers. Its merit lies in its being very largely the outcome of the author's personal experience and that of his friends. His descriptions of the haunts of big game in the Alps are excellent, and the historical information which, gathered from authentic and reliable sources, is scattered throughout its pages, makes the work, from a naturalist's point of view, extremely interesting.

British Birds' Nests: how, where, and when to find them. By R. and C. KEARTON. 8vo, pp. i-xx, 1-368. Illustrated from Photographs. London: Cassell & Co. 1896.

WE ought not to let the summer pass by without drawing attention to a very attractive book which has been published with the above title.

The species are arranged alphabetically to facilitate reference, to which end also the names are boldly printed in capitals. Then in separate paragraphs with italic side-heads we find *Description of Parent Birds, Situation and Locality, Materials of Nest, Eggs, Time, and Remarks*. This dispenses with the necessity for an index, and enables the reader to obtain information on any of these points with the least possible trouble.

On the whole the information given is fairly accurate, though sometimes it does not go far enough. For example, the expression "in suitable parts of Scotland" hardly indicates with sufficient clearness the nesting haunts of the Wigeon. No doubt the author has aimed at compression. He does not always name the locality wherein the photograph of a nest and eggs was taken, but when he does so, the information is very acceptable, as, for example, when we read that in the case of the Twite the photograph was taken "on a small island near Oban, where we found several nests"; that the Shoveller, Pochard, Teal, and Woodcock's nests were taken in Norfolk; the Curlew's nest on the Westmorland Hills; that the Red-necked Phalarope nested in the Orkneys in 1892; and that "two pairs of the Roseate Tern succeeded in rearing their young at the Farne Islands in the year 1894." A pretty illustration of Arctic Terns on their nests at the Farne Islands faces p. 286, and the "typical Norfolk Duck Mere" (p. 214) is good.

The illustrations on the whole are excellent, the outlines being well defined, and the subjects well chosen. Those which illustrate the nesting of the Curlew, the Stone Curlew, the Red-breasted Merganser, the Gannet, and the Red-throated Diver (the last-named procured in the Outer Hebrides), are especially to be commended. The difficulty experienced in taking photographs of some of the nests was occasionally very great, especially when the wind happened to cause a vibration of the camera, or a movement of the leaves or sedges amongst which the nest was placed. But the energy and perseverance of the authors in most cases triumphed, and the result oftentimes exceeded their expectations. To realise the adverse conditions under which the camera had to be brought into position, the reader would do well to peruse the preface, in which some of the authors' adventures are graphically described. The value of the plates in many cases has thus become enhanced by reason of the difficulty of obtaining them.

If we have one fault to find, it is with the highly-glazed paper on which the book is printed. Not only is this very trying to the eyes from the strong light which it reflects, but from the white lead which it contains, it adds considerably to the weight of the volume.

